

REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow. Claims 1-12 were rejected in the Office Action. No claims have been amended, and no new matter has been added.

A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, Claims 1-12 are now pending in this application.

Claim Rejections – 35 U.S.C. § 103

On page 1 of the Office Action, the Examiner rejected Claims 1-12 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,225,004 to Hayashi (“Hayashi”) in view of U.S. Patent No. 5,827,494 to Yano et al. (“Yano et al.”).

The Examiner stated that:

With respect to claims 1, 10, 12, Hayashi teaches a nickel hydride battery comprising a hydrogen storage alloy as the negative electrode, an alkaline electrolyte and nickel hydroxide as the positive electrode. The nickel hydroxide powder is mixed with a cobalt hydroxide powder, a metallic cobalt powder, a zinc oxide powder and a calcium fluoride powder. Water is also added to the resultant mixture to make a paste of active material (a bulk material). See Abstract; Column 1, Lines 10-30; Column 2, Lines 35-48; Column 4, Lines 35-43; Column 5, Lines 19-25; Claims 1-3.

However, the Examiner acknowledged that “Hayashi does not teach the inclusion of an aluminum compound in the positive electrode.” The Examiner stated that:

Yano et al. teach a nickel hydride battery having a positive electrode of nickel hydroxide. The surface of the hydroxide is covered with a mixed crystal of cobalt hydroxide and a hydroxide of at least one metal (M) selected from the group consisting of aluminum, magnesium, indium and zinc. The

aluminum hydroxide can become soluble in the electrolyte upon charging. The coating on the nickel hydroxide can maintain a long charge-discharge cycle and increase the conductivity of the electrode. See Abstract, Column 3, Lines 8-20.

The Examiner concluded that:

Therefore, it would have been obvious to one of ordinary skill in the art to coat the positive electrode active material with aluminum hydroxide (which is soluble in the electrolyte) in the battery of Hayashi, because Yano et al. teach the use of aluminum hydroxide coating on the nickel hydroxide to improve the performance of the electrochemical cell. A method of forming an active positive electrode containing aluminum hydroxide in a battery is also taught.

Hayashi is directed to a “nickel positive electrode for alkaline storage batteries and method for producing the same.” Yano et al. is directed to a “process for producing non-sintered nickel electrode for alkaline battery” and discloses “immersing nickel hydroxide particles or solid solution particles consisting essentially of nickel hydroxide in a solution of a cobalt salt and a salt of at least one metal (M) selected from the group consisting of aluminum, magnesium, indium and zinc, adding an alkali to the solution to co-precipitate cobalt hydroxide and a hydroxide of the metal, thereby covering the surface of the nickel hydroxide particles” (Column 2, lines 28-47).

Claims 1, 9, and 10 are in independent form and recite a “Ni/metal hydride secondary element” comprising, in combination with other elements, “a positive electrode operably connected to the negative electrode by the electrolyte and formed by a bulk material in a three-dimensional metallic conductive structure, the positive electrode comprising within said bulk material an aluminum compound soluble in the electrolyte, nickel hydroxide and cobalt oxide” (emphasis added). Claims 2-8 depend from independent Claim 1, and Claim 11 depends from Claim 10.

Claim 12 is in independent form and recites a “method of forming an active positive electrode” comprising, in combination with other elements, “mixing an aluminum compound soluble in the electrolyte, nickel hydroxide and cobalt to form a bulk material.”

The “Ni/metal hydride secondary element” recited in independent Claims 1, 9, and 10 and the “method of forming an active positive electrode” recited in independent Claim 12 would not have been obvious in view of Hayashi, alone or in any proper combination with Yano et al. under 35 U.S.C. § 103(a). Hayashi, alone or in any proper combination with Yano et al., does not disclose, teach or suggest a “Ni/metal hydride secondary element” comprising, in combination with other elements, a “positive electrode comprising within said bulk material an aluminum compound soluble in the electrolyte, nickel hydroxide and cobalt oxide.” Hayashi, alone or in any proper combination with Yano et al., also does not disclose, teach or suggest a method comprising, in combination with other elements, “mixing an aluminum compound soluble in the electrolyte, nickel hydroxide and cobalt to form a bulk material.”

As noted by the Examiner, “Hayashi does not teach the inclusion of an aluminum compound in the positive electrode.” Accordingly, Hayashi does not teach or suggest a bulk material that includes an aluminum compound. Yano et al. also does not teach or suggest a bulk material that includes an aluminum compound. In contrast, Yano et al. teaches an aluminum-doped nickel hydroxide. As described in the present Application at paragraph [0022] of the present Application:

In the case of such aluminum-doped nickel hydroxides, the aluminum incorporated in the cell occurs in the host lattice of the nickel hydroxide and replaces the nickel lattice positions. It thus changes the structural, chemical and electrochemical characteristics of the nickel hydroxide, which is not the case when an aluminum compound is added according to the invention to the positive bulk material. Furthermore, when aluminum-doped nickel hydroxides are used, the aluminum is not dissolved, or can be dissolved only with extreme difficulty, by the electrolyte from the nickel aluminum hydroxide mixed crystal.

To transform the nickel positive electrode for alkaline storage of Hayashi and the process for producing non-sintered nickel electrode for alkaline battery of Yano et al. into a “Ni/metal hydride secondary element” as recited in independent Claims 1, 9, and 10 and a “method of forming an active positive electrode” as recited in independent Claim 12 would

require still further modification, and such modification is taught only by the Applicants' own disclosure.

The "Ni/metal hydride secondary element" recited in independent Claims 1, 9, and 10, considered as a whole, would not have been obvious in view of Hayashi and Yano et al. under 35 U.S.C. § 103(a). Further, the "method of forming an active positive electrode" recited in independent Claim 12, considered as a whole, would not have been obvious in view of Hayashi and Yano et al. under 35 U.S.C. § 103(a).

The rejection of Claims 1, 9, 10, and 12 over Hayashi in view of Yano et al. under 35 U.S.C. § 103(a) is improper. Therefore, Claims 1, 9, 10, and 12 are patentable over Hayashi in view of Yano et al.

Dependent Claims 2-8, which depend from independent Claim 1, and dependent Claim 11, which depends from independent Claim 10, are also patentable. See 35 U.S.C. § 112 ¶ 4.

The Applicants therefore respectfully request withdrawal of the rejection of Claims 1-12 under 35 U.S.C. § 103(a).

* * *

It is submitted that each outstanding objection and rejection to the Application has been overcome, and that the Application is in a condition for allowance. Claims 1-12 will be pending in this Application. The Applicant requests reconsideration and allowance of all pending Claims 1-12.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 06-1447. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 06-1447. If any extensions of time are needed for timely acceptance of

papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R.
§1.136 and authorizes payment of any such extensions fees to Deposit Account No. 06-1447.

Respectfully submitted,

Date 3/10/04

By



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